

[Master Thesis]

The effects of gender and marriage on individual donation in Korea

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Abstract

This paper examines the relations between charitable giving and tax deduction and how individuals' giving behavior is influenced by their gender and marital status. And then we estimate the price elasticity using NaSTaB(National Survey of Tax and Benefit) panel data from South Korea. The samples in the estimation are limited to the wage workers who submitted the tax return document in order to increase the accuracy of the estimation. The price elasticity of charitable giving is estimated very high as a whole, female show more elastic than male and married people are less elastic than singles, which are very different from the previous studies abroad. The analysis suggests that we should pay attention to Korean's giving characters that are different from US and make the policy support for philanthropy more efficient.

Keywords: Price elasticity of charitable giving, gender, marital status, tax deduction, NaSTaB

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1. Introduction

Philanthropy has developed a long history and formed the world's most sophisticated system in the USA. And study in this field also got a lot of great achievements during the time from 1967 that Taussing firstly worked a study to calculate the price elasticity of individuals' donation by using the American tax-return materials. However, comparing with the prosperous status in America, philanthropy in East Asia is just getting started.

According to official statistics in 2011, the total amount of annual charity in the USA is U\$298.4billion, for U\$962.6 per capita, while U\$5.1billion total giving and U\$104 per capita in Korea, and U\$13.6billion total , U\$9.9 per capita in China.

Is that true that East Asian lack of altruism and charitable culture?

A lot of evidence can be found to against this view. Chinese and Korean have been deeply influenced by Confucianism since thousands years ago, which receives benevolence and philanthropism as a core value. And “generous, helping neighbors in trouble” has always been taught as a virtue from age to age. It is very common to see various kinds of charitable behavior in daily life, but most of them are not credited into statistic data.

“May 12th Earthquake ” happened in west China, 2008, was a good case to prove Asian's altruism, which raised specific donations to 8.67billion dollars in just 4months.

However, it is difficult to establish a successful charity system only with altruism. Legal constraint and government incentives may play more important roles in forming a perfect charitable market. These are exactly what China and Korea short of and badly-needed at the present.

In China, the unsound relevant legal system and low-diaphaneity of donation flowing seriously restrict the development of philanthropy. What's worse, “Guo Meimei event” in 2011

caught a series of credit crisis to most charity organizations especially the China Red Cross. And since that, the society donation has continually decreased up to now.

And Korea is in the sensitive period of the tax reform now. From January 1st,2014, Korea government has changed the tax refund policy from income deduction to tax deduction, and set a deduction limit up to 2,500,000won for total 8 deduction items including donation. In one word, individuals' donation deduction will decrease a lot while government tax revenue will increase as much as that by the implementation of these series of policies. However, there are economists published opinions that these policies may cause a negative effect to individuals' giving behavior, that decrease the amount of donation more than the increase in tax revenue. This research will followed the previous studies to challenge the validity of tax reform in 2014 and put forward an idea of market segmentation for individual' charitable giving.

The present study gets many ideas from the previous papers in Korea, America and China, especially Song(2013)'s related research, which calculated price elasticity of charitable giving in Korea very high as much as around 7.5 to 9.9. The same as Song(2013), this paper sets a random effect tobit model to estimate the price elasticity of giving for the wage earners in Korea using NaSTaB Panel Data. And on this basis, this study extends the point to wage earners' gender and marital status, and how these variables influence their giving.

The structure of the paper is as follows: in the next section, after a brief review of the relevant concepts and the previous researches, some point assumptions are post. Chapter3 provides an introduction of data used in this study. The theoretical framework and estimating model are given in Chapter4, and the statistic variables are also introduced in this part. Chapter5 shows the estimation results. Finally, conclusions, the future directions of research and insufficient in this research are summarized.

2. Previous research and assumptions

2.1 The previous research

Individuals' giving motivation models are usually divided into 3 kinds: Public good model, Private consumption model and Impure altruism model.

Public good model regards the donations donated into social welfare, social culture, art, education, religion and others as the privately provided public goods, and because of the public good characters, it may lead up to a crowding-out effect, that a direct government support may decrease the amount of social donation.

Private consumption model can be interpreted as a donator's utility maximization function. It follows the principles of achieving the maximize utility by using the minimize cost.

Impure altruism model is a hybrid model of the two models that contains charitable giving's public good character and private good character both.

The theory model will be chosen consistent with the faith in the taxation law. Korean researchers in this field generally consider giving as taxpayers' consumption.

2.2 Assumptions

A1: Individuals' donation behavior is elastic to giving price.

According to Maslow's hierarchy of needs theory, humans' needs can be divided into 5 levels from basic to advanced: Physiological needs, Safety needs, Love and belonging, Esteem, Self-actualization. Physiological needs are needs for the necessities of life, such as food, drink and sleep. And the need for individuals' charitable giving, is obviously a high level need -for esteem and self-actualization. Then giving can be counted as a kind of luxury. And according to the view of the traditional microeconomics, the price elasticity of luxury is usually bigger than the necessities. Therefore this paper will cover the assumption that individuals' giving is very elastic to giving price.

A2: Female and male have significant different elasticity in charitable giving.

James(2001) calculated the different price elasticity between male and female. And the result indicates that men have the bigger price elasticity than women for giving, he proves female is the more fair gender than male.

But for the different lifestyles and consumption levels, this result may not work in Korea. In addition, as married joint filling has not been worked into Korea's tax deduction system, this paper may count out a different result from the previous studies.

A3: Marriage do influence people's giving behavior, and work different on two sexes.

Marriage naturally changes people's lifestyle, it is not a simple combination of women and men, but an optimized integration. Some consumptions of each gender can be saved as marital public goods after married. In this part, this research will focus on the question that how the public goods character of giving in marriage is working on male and female's giving behavior.

3. Data

This paper uses the NaSTaB (National Survey of Tax and Benefit) panel data from 2007~2011 published by Korea institute of public financial. By merging the household and personal data sets, this work covers total 5985 pooling data that collected from 2122 individuals. In order to make statistic result more accurate, this study generates the dependent variable as Max [donation, donation deduction].

The data set collected samples who handed over the receipt for earned income tax withholding and global income tax return to make sure the true income deduction situation is exact and clear. But the cases that respondents did not hand over the document or record the wrong amount can also lead to the bias.

In chapter 5, gender and marriage effect is estimated respectively. This data set contains 4268 men and 1717 female, while 5121 married and 864 singles. Here it is worth noting that the married group includes both married that with spouse and once married that widowed and divorced. Therefore the real conditions of once married people without spouse can not be observed.

4. Empirical analysis

4.1 Theoretical framework and conceptual framework

This study uses the private consumption model consistent with Heonjae Song's paper. That considers giving as individual's private consumption and describe this question as a donator's utility maximizing function.

$$MaxU(c_i, g_i) \text{ s.t. } c_i + p_i g_i = m_i, g_i \geq 0. \quad (1)$$

g: individual's giving before tax deduction

t: marginal tax rate

p: 1-t, individual's donation price

pg: individual's actual giving expenditure

$\varepsilon = \frac{p}{g} \times \frac{\partial g}{\partial p}$: price elasticity of giving

4.2 Econometric models and estimation method

As the giving value(Y) is greater or equal to zero, and most individuals covered in data did not give, this work chooses a Tobit Model to fit the dates.

$$\ln g_{it} = \max\left((0, \psi) + \beta_0 \ln m_{it} + \beta_1 \ln p_{it} + z_{it} \gamma + \mu_i + \mu_{it}\right)$$

$$t = 1, 2, \dots, T \quad (2)$$

In function(2), z_{it} contains the population statistic variables and the household net asset variable that can influence individuals' giving preference. And μ_i means the unobserved heterogeneity of i using this data set.

4.3 Statistics

As the object of this study is limited to the wage workers who submitted the tax return document, we defined the explanatory variable as Max [donation, donation deduction]. The reasons are as follow. The samples of giving expenditure variable are only 48% the same with the donation deduction variable, while there are about 20% samples that giving expenditure are bigger than donation deduction and 32% samples that donation deduction are bigger than giving expenditure. Notice that if the difference is smaller than ₩100thousand, it will be regard as the respondent's mistake. Except this situation, there are also about 14% samples that giving expenditure is bigger than donation deduction, and 18% samples are contrary.

The situation that giving amount is bigger can be explained as the income tax deduction is beyond the limit or the donation field is not the listed tax deduction object. However, if the deduction amount is bigger, there are some reasons like the respondents do not know clearly the donors' real status, the actual donors transferred the tax return document to the high wage family member in order to get a bigger tax incentive or just reporting an exaggerated giving amount to get more tax deduction. In one word, the amount of charitable giving can be counted more or less than the real state. Therefore we define the explanatory variable as $\max[\text{donation}, \text{donation deduction}]$ to unify the variable and make sure the result will be stable and accurate. However, the donors' tax deduction document transfer behavior cannot be observed, it will lead to the bias. That will be the limitation of this study.

The core independent variable in this study is donation price, which is defined as one minus marginal tax rate $(1-t)$ here. In this way, the endogenous problem between donation and donation price that pointed out by Feldstein and Taylor(1967) can be solved. So it has been used widely in the donation price correlation researches.

And as mentioned before, since it has not been adopted married joint filling in Korean income tax law, many actual donors transfer the tax return document to higher income family member to maximize the deduction incentive. So we must consider the public goods character of giving in household for the donors or the potential donors think about the household income more than the income themselves. Therefore the household income is considered more suitable to used in this study.

Besiding price and income, the other independent variables are: net asset, age, education(schooling years), gender(female dummy), marital status(married dummy), family size, capital resident and home own, those are the same with Park(2010) and Song(2013).

Notice that 28.69% samples of the data are female and 85.56% samples are married.

<Table1> statistics

Variable	Mean	Std. Dev.	Min	Max
Max[donation deduction, donation]	79.86	176.54	0	3119.56
Donation price	90.81	6.63	65	100
Household income	54974	35238	1080	1006816
Net asset	223490	304175	-1074173	9265000
Age	40.29	9.28	19	78
Schooling years	14.29	2.56	0	22
Female (%)	28.69	45.23	0	1
Married (%)	85.56	35.15	0	1
Family size	3.52	1.13	1	8
Capital residence (%)	41.89	49.34	0	1
Home own (%)	63.02	48.28	0	1
Observations	5985			

Data resource: financial panel 1~5 years

Note: 1. Household income and net asset are measured in thousand of Korean Won(₩).

2. The current exchange rate is 1\$ equals 1015₩.

5. Estimation

<Table 2> Estimation of Random Effect Tobit for Total data set

Explanatory variables	Max[donation, donation deduction]
Ln(donation price)	-7.149*** (0.774)
Ln(household income)	1.450*** (0.116)
Ln(net asset)	-0.066 (0.293)
Age	0.063*** (0.009)
Schooling years	0.232*** (0.028)
Gender	0.151 (0.170)
Marital status	-0.191 (0.190)
Family size	-0.131** (0.525)
Capital residence	-0.455*** (0.147)
Home own	-0.158 (0.106)
Inverse mills ratio	-0.760*** (0.157)
Numbers of observation	5985
Numbers of groups	2122
Log likelihood	-9130.997

Note: *** p<0.01, ** p<0.05, *p<0.1

<Table 3> Estimation of Random Effect Tobit for Male & female data

sex	Male only	Female only
Explanatory variables	Max[donation, donation deduction]	Max[donation, donation deduction]
Ln(donation price)	-5.719*** (0.869)	-10.240*** (1.813)
Ln(household income)	1.681*** (0.149)	1.241*** (0.194)
Ln(net asset)	0.093 (0.356)	-0.425 (0.526)
Age	0.049*** (0.010)	0.104*** (0.019)
Schooling years	0.194*** (0.032)	0.324*** (0.058)
Marital status	-0.959*** (0.254)	0.873*** (0.328)
Family size	-0.160*** (0.062)	-0.184* (0.104)
Capital residence	-0.444*** (0.171)	-0.384 (0.281)
Home own	-0.216* (0.120)	0.074 (0.223)
Inverse mills ratio	-0.706*** (0.167)	-1.324*** (0.425)
Numbers of observation	4268	1717
Numbers of groups	1444	679
Log likelihood	-6592.185	-2516.147

Note: *** p<0.01, ** p<0.05, *p<0.1

<Table 4> Estimation of Random Effect Tobit for Married& Single

Marital status	Married(married and married once)	Single
Explanatory variables	Max[donation, donation deduction]	Max[donation, donation deduction]
Ln(donation price)	-6.704*** (0.824)	-7.504*** (2.561)
Ln(household income)	1.541*** (0.127)	1.533*** (0.315)
Ln(net asset)	0.000 (0.308)	-0.090 (1.013)
Age	0.053*** (0.009)	0.0787** (0.035)
Schooling years	0.216*** (0.029)	0.233** (0.104)
Gender	-0.127 (0.186)	1.665*** (0.421)
Family size	-0.075 (0.058)	-0.685*** (0.175)
Capital residence	-0.446*** (0.155)	-0.384 (0.412)
Home own	-0.143 (0.111)	0.533 (0.395)
Inverse mills ratio	-0.852*** (0.167)	-0.361 (0.499)
Numbers of observation	5121	864
Numbers of groups	1800	404
Log likelihood	-8049.432	-1081.442

Note: *** p<0.01, ** p<0.05, *p<0.1

<Table 5> Estimation of Random Effect Tobit for Male only

Marital status	Married	Single
Explanatory variables	Max[donation, donation deduction]	Max[donation, donation deduction]
Ln(donation price)	-5.904*** (0.897)	1.710 (4.035)
Ln(household income)	1.716*** (0.158)	2.226*** (0.549)
Ln(net asset)	0.153 (0.367)	0.794 (1.632)
Age	0.0414*** (0.011)	0.0776 (0.054)
Schooling years	0.185*** (0.032)	0.289* (0.161)
Family size	-0.075 (0.065)	-1.517*** (0.331)
Capital residence	-0.434** (0.177)	-0.578 (0.612)
Home own	-0.208 (0.124)	0.866 (0.559)
Inverse mills ratio	-0.739*** (0.170)	0.481 (0.929)
Numbers of observation	3855	413
Numbers of groups	1288	199
Log likelihood	-6130.589	-450.642

Note: *** p<0.01, ** p<0.05, *p<0.1

<Table 6> Estimation of Random Effect Tobit for Female only

Marriage status	Married	Single
Explanatory variables	Max [donation, donation deduction]	Max[donation, donation deduction]
Ln(donation price)	-8.976*** (2.212)	-14.124*** (3.428)
Ln(household income)	1.363*** (0.233)	1.401*** (0.390)
Ln(net asset)	-0.394 (0.587)	-0.192 (1.285)
Age	0.105*** (0.022)	0.0777* (0.046)
Schooling years	0.351*** (0.065)	0.167 (0.137)
Family size	-0.145 (0.128)	-0.289 (0.214)
Capital residence	-0.467 (0.321)	-0.380 (0.553)
Home own	0.067 (0.248)	0.0820 (0.565)
Inverse mills ratio	-2.304*** (0.643)	-0.778 (0.604)
Numbers of observation	1266	451
Numbers of groups	512	205
Log likelihood	-1903.574	-620.641

Note: *** p<0.01, ** p<0.05, *p<0.1

<Table 7> comparison of results

Total		Married	Single
	-7.149*** (0.774)	-6.704*** (0.824)	-7.504*** (2.561)
Male	-5.719*** (0.869)	-5.904*** (0.897)	1.710 (4.035)
Female	-10.240*** (1.813)	-8.976*** (2.212)	-14.124*** (3.428)

Note: *** p<0.01, ** p<0.05, *p<0.1

1. Explanation of the statistic results(correlation and significance)
2. How are my results different from the previous studies.

6. Conclusion

The price elasticity is estimated as high as -7.149, that proves individual donators in Korea are sensitive to giving price.

This result is very similar with Song(2013)'s findings that estimated the price elasticity of giving as much as around 7.5 to 9.9.

These values are much higher than the other previous works did in the US, and it can be explained as follows:

First, the different econometric method; second, the difference between experiment data and real demographic data; third, there exist income and consumption gap between American and Korean, giving consumption seems more luxury to Korean; fourth, the culture and lifestyle difference; fifth, as time flows, informatization level is higher and high, people get information much easier and used to make an efficient choice.

Korea female have a bigger price elasticity of giving consumption than male, which is just the opposite with James(2003)

There are three reasons can be find to explain that. First, the different research method.

Second, about 81% individuals in this data set are married. As Korea does not use married joint filing, married female should think more about their own income to evaluate if the price is economical. The wage level in Korea is lower than that in the USA, that makes giving consumption be a more advanced consumption in Korea. So the price elasticity will be higher. Comparing to the relatively independent financial management in household in the western countries, people in eastern countries prefer to let a clever female(usually wife or mother) to charge the household financial management. That makes eastern female have more economic thinking and become sensitive to price.

Third, Sales and discount are always attractive to females. You can see the long consumer line in front of the counter of luxury stores when it is on sale. The estimation indicates that donation discount is also attractive to women just like other goods.

Single people get a bigger price elasticity of giving than married people.

The present study suggest the special items in income tax law in Korea from 2014 is less efficiency than before, which is consistent with Song(2013). As the results are very different from the related researches abroad, Korea government should make suitable tax deduction policy to fit the high elastic donators.

The married data set in this study contains both married and married once.

The data used in this paper is NaSTaB panel data from 2007~2011. And marital status variable is only divided into married and single.

In order to decrease the tax as much as possible, there are many people transfer the giving tax reduction document to his or her family members whose wages are higher.

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